

WHAT IS CLAIMED IS:

1. An etching method configured to make a through hole by etching an object to be etched from one of major surfaces thereof by dry etching, comprising:

5           said dry etching being conducted under the condition where a conductor with a higher electric conductivity than that of said entity is in contact with said entity at least in or near a location for making said through hole.

10           2. The etching method according to claim 1 wherein said entity to be etched is made of a semiconductor.

15           3. The etching method according to claim 1 wherein said entity to be etched is made of silicon.

20           4. The etching method according to claim 1 wherein said conductor is a metal.

25           5. The etching method according to claim 1 wherein said conductor is a conductor film formed on the entire surface of said other surface of said entity to be etched.

            6. The etching method according to claim 1 wherein said conductor is a conductor film formed on a

location of said other surface of said entity near the region for making said through hole.

7. The etching method according to claim 1  
5 wherein said conductor is a metal having a low melting point.

8. The etching method according to claim 1  
10 wherein said through hole is made by setting said conductor with a low melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a wafer as said entity thereon; fixing said wafer onto  
15 said wafer stage by lowering temperature of said wafer stage to a level lower than the melting point of said conductor, and thereafter conducting said dry etching of said wafer.

9. The etching method according to claim 1  
20 wherein said through hole is made by setting said conductor with a high melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a  
25 wafer as said entity thereon; and hereunder conducting said dry etching of said wafer.

10. The etching method according to claim 1 wherein said dry etching is conducted by using SF<sub>6</sub> gas and C<sub>4</sub>F<sub>8</sub> gas.

5 11. The etching method according to claim 1 wherein said dry etching uses ions.

12. The etching method according to claim 1 wherein said dry etching is reactive ion etching.

10 13. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 3.

15 14. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 5.

20 15. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 8.

25 16. The etching method according to claim 1 wherein said through hole has an aspect ratio not smaller than 10.

17. A manufacturing method of a structure

including a step of making a through hole by etching an object to be etched from one of major surfaces thereof by dry etching, comprising:

5           said dry etching being conducted under the condition where a conductor with a higher electric conductivity than that of said entity is in contact with said entity at least in or near a location for making said through hole.

10       18.       The manufacturing method of a structure according to claim 17 wherein said entity to be etched is made of a semiconductor.

15       19.       The manufacturing method of a structure according to claim 17 wherein said entity to be etched is made of silicon.

20       20.       The manufacturing method of a structure according to claim 17 wherein said conductor is a metal.

25       21.       The manufacturing method of a structure according to claim 17 wherein said conductor is a conductor film formed on the entire surface of said other surface of said entity to be etched.

22.       The manufacturing method of a structure

according to claim 17 wherein said conductor is a conductor film formed on a location of said other surface of said entity near the region for making said through hole.

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23. The manufacturing method of a structure according to claim 17 wherein said conductor is a metal having a low melting point.

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24. The manufacturing method of a structure according to claim 17 wherein said through hole is made by setting said conductor with a low melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor and putting a wafer as said entity thereon; fixing said wafer onto said wafer stage by lowering temperature of said wafer stage to a level lower than the melting point of said conductor, and thereafter conducting said dry etching of said wafer.

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25. The manufacturing method of a structure according to claim 17 wherein said through hole is made by setting said conductor with a high melting point on a wafer stage in a dry etching apparatus; maintaining said wafer stage at a temperature not lower than the melting point of said conductor to melt said conductor

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and putting a wafer as said entity thereon; and  
hereunder conducting said dry etching of said wafer.

26. The manufacturing method of a structure  
according to claim 17 wherein said dry etching is  
conducted by using  $\text{SF}_6$  gas and  $\text{C}_4\text{F}_8$  gas.

27. The manufacturing method of a structure  
according to claim 17 wherein said dry etching uses  
ions.

28. The manufacturing method of a structure  
according to claim 17 wherein said dry etching is  
reactive ion etching.

29. The manufacturing method of a structure  
according to claim 17 wherein said through hole has an  
aspect ratio not smaller than 3.

30. The manufacturing method of a structure  
according to claim 17 wherein said through hole has an  
aspect ratio not smaller than 5.

31. The manufacturing method of a structure  
according to claim 17 wherein said through hole has an  
aspect ratio not smaller than 8.

32. The manufacturing method of a structure according to claim 17 wherein said through hole has an aspect ratio not smaller than 10.